

CAN A CARBON PERMIT SYSTEM REDUCE SPANISH UNEMPLOYMENT?

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Motivation

Spain has two severe challenges

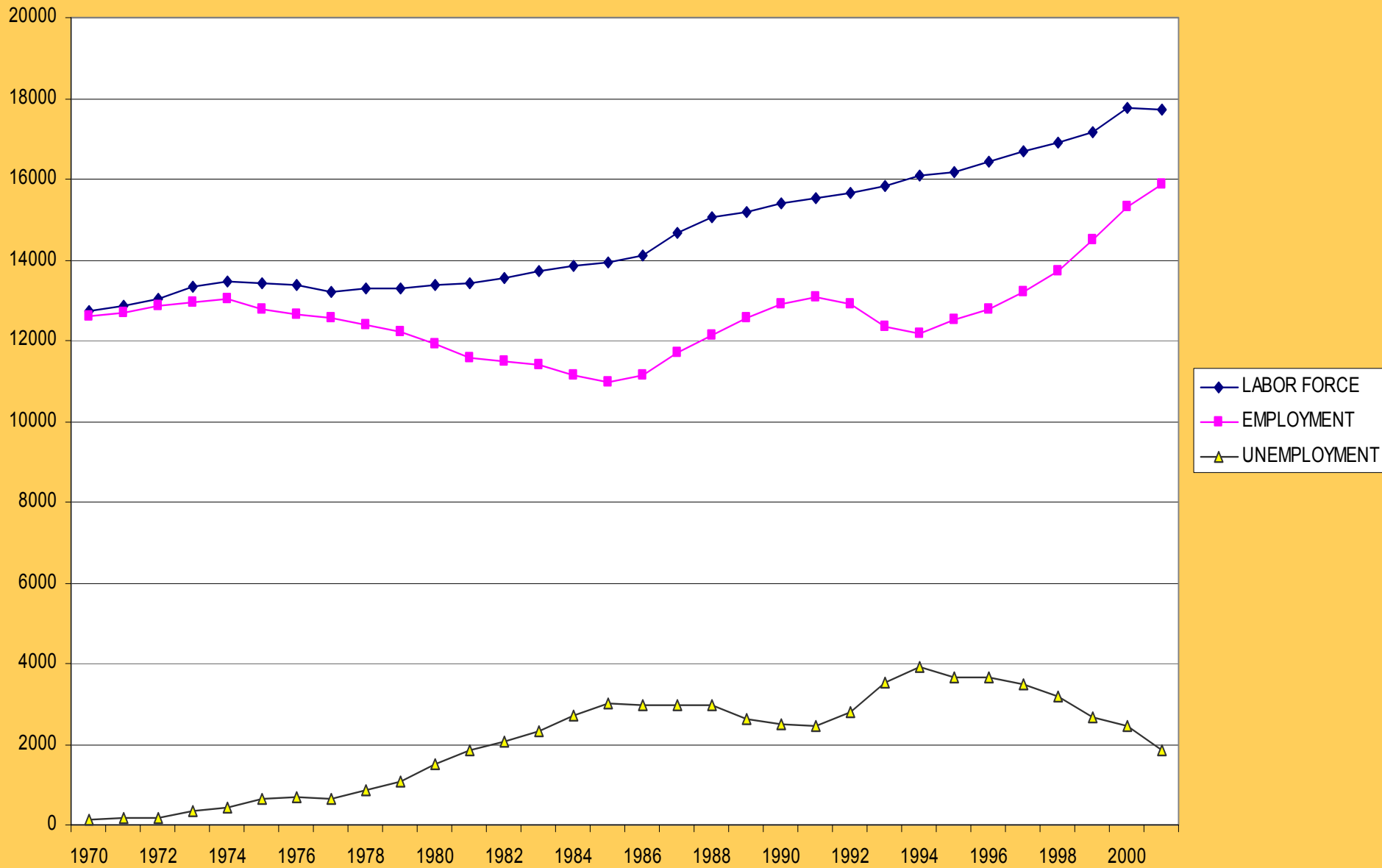
- I. As part of EU, participates in the Kyoto Agreement on greenhouse gas control.**
 - Faces severe challenge in fulfilling commitments**

- II. Spain has very high unemployment rates in EU**
 - Deep concern for the unemployment consequences of imposing emission costs on firms**

I) Spains CO₂ emission challenge:

MEMBER STATE	Base year ¹⁾	2002	Change	Change base	Targets 2008–12
	(million tonnes)	(million tonnes)	2001–2002 (%)	year–2002 (%)	under Kyoto Protocol and "EU burden sharing" (%)
Austria	78,0	84,6	0,3%	8,5%	-13,0%
Belgium	146,8	150,0	0,5%	2,1%	-7,5%
Denmark ²⁾	69,0	68,5	-1,2%	-0,8% (-9,1%)	-21,0%
Finland	76,8	82,0	1,7%	6,8%	0,0%
France	564,7	553,9	-1,4%	-1,9%	0,0%
Germany	1253,3	1016,0	-1,1%	-18,9%	-21,0%
Greece	107,0	135,4	0,3%	26,5%	25,0%
Ireland	53,4	68,9	-1,6%	28,9%	13,0%
Italy	508,0	553,8	-0,1%	9,0%	-6,5%
Luxembourg	12,7	10,8	10,4%	-15,1%	-28,0%
Netherlands	212,5	213,8	-1,1%	0,6%	-6,0%
Portugal	57,9	81,6	4,1%	41,0%	27,0%
Spain	286,8	399,7	4,2%	39,4%	15,0%
Sweden	72,3	69,6	2,0%	-3,7%	4,0%
United Kingdom	746,0	634,8	-3,3%	-14,9%	-12,5%
EU-15	4245,2	4123,3	-0,5%	-2,9%	-8,0%

Figure 1. Labor force, employment, and unemployment in Spain, 1970-2001
(in thousands)



Spain's labour market

- High proportion of unskilled labour in labour force and among unemployed
- Low mobility of labour across regions
- Strong employment protection, combined with fixed-term contracts for parts of the labour, particularly unskilled
- Large wedges between take-home pay and labour costs.
- Generous unemployment benefits

Main questions addressed

Is introducing carbon permit auctions likely to accentuate the Spanish unemployment problem?

How can revenue be recycled in order to minimise unemployment effects?

Simulations on a CGE model

- ✓ Spain as SOE
- ✓ Standard, static model with a second-best setting, i.e. several prior distortions
- ✓ Elaborated particularly on two points:
 - ✓ Comprehensive description of the labour market frictions and distortions
 - ✓ Detailed modelling of sector-specific emissions, substitution possibilities and emission prices

The labour market

- ✘ **Two distinct labour types;** imperfectly substitutable in demand: Skilled and Unskilled
- ✘ **Matching model:** Frictions modelled as implying search costs, that decrease when unemployment or labour demand increase (Balistreri, 2002)
- ✘ **Tax wedges** in the labour market and unemployment benefits modelled
- ✘ **Demand for leisure is elastic,** i.e. voluntary and involuntary unemployment

Design of the analysis:

SPLIT INTO 2 EFFECTS:

1: Pure abatement effect

25% cut in CO2 permits and **lumpsum recycling** to households

2. Pure recycling effects

(Full reform minus 1:)

Alternative a):

Reduced payroll tax exclusively **for unskilled labour**

Alternative b):

Reduced payroll taxes exclusively **for skilled labour**

Pure abatement effects

= effect of introducing emission permit prices

What happens in the labour market when prices increase?

Direct effect:

- ✗ Labour Demand ∇ (competitiveness and domestic demand ∇)
- ✗ Labour Supply ∇ (lower real income) - **but less**

In equilibrium:

The initial labour demand deficit generates

- ✓ more (equilibrium) unemployment
and/or
- ✓ lower wages

Results

% change		Pure Abatem.	Pure recycling		Abatement+Recycling	
		(LUMPSUM)	USK	SK	USK	SK
Unemployment Rate	SK	0,01	0,19	-0,99	0,20	-0,98
	USK	-0,02	-0,42	0,11	-0,44	0,09
	TOTAL	-0,00	-0,08	-0,44	-0,08	-0,44
				0,00		
Employment	SK	-0,01	-0,32	1,65	-0,33	1,64
	USK	0,06	1,10	-0,31	1,16	-0,25
	TOTAL	0,03	0,49	0,53	0,52	0,56
Labour Supply	SK	-0,01	-0,30	1,53	-0,31	1,52
	USK	0,05	1,00	-0,27	1,05	-0,22
	TOTAL	0,03	0,48	0,45	0,51	0,48
Factor rents	SK	-2,69	0,65	6,21	-2,04	3,52
	USK	-2,49	4,76	0,77	2,27	-1,72
	CAPITAL	-2,40	0,22	0,34	-2,18	-2,06

Pure abatement effects; conclusion:

Adverse unemployment effects are avoided, as

- ✓ labour share is low in carbon intensive sectors
- ✓ substitution of labour for other factors takes place

Pure recycling effects; reduced payroll tax on unskilled labour

What happens in the labour markets?

UNSKILLED

Direct effect:

- ✗ Labour Demand Δ (competitiveness, domestic demand and substitution Δ)
- ✗ Labour Supply Δ (higher real income)

In equilibrium:

The initial excess labour demand generates

- ✓ less (equilibrium) unemployment and/or higher wages

SKILLED ↓

Direct effect:

- ✗ Labour Demand Skilled ∇ (strongest substitution)
- ✗ Labour Supply Δ (higher real income)

In equilibrium:

- ✓ More (equilibrium) unemployment and/or decreased wages

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Abatement with unskilled-biased recycling of revenue; conclusion:

Unemployment falls somewhat, as

- ✓ the favourable effects for unskilled labour outperform the adverse effect for skilled
- ✓ the opposite effects in the two labour markets are due to
 - ✗ substitution for skilled labour at the firm level
 - ✗ substitution in macro, i.e. the relative contraction of skilled-intensive industries

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Summing up:

- ✓ **Introducing CO₂ abatement policy into the Spanish economy has no costs in terms of unemployment.**
- ✓ **On the contrary, by using revenues to reduce the distortions in the labour market, unemployment falls.**
- ✓ **Targeting revenue to the skilled is most promising w.r.t unemployment effects in macro.**
- ✓ **Dilemma: The gap between the two skill groups in terms of unemployment rates and wages will deepen.**

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